4 Major Transportation Issues in the SWATS Area

The purpose of this chapter is to identify and document the transportation issues existing and anticipated in the southwest portion of the Phoenix Metropolitan area. The purpose of this chapter is to inform the development of the Regional Transportation Plan for the greater Phoenix area. The conclusions of this chapter form part of the foundation for the identification of new facilities and services needed in the southwest valley to meet the future transportation demands of the area.

This chapter was developed as a Working Paper (WP) and contains data and information that is continuously updated, some of which may have changed or may have been superseded by the final Regional Transportation Plan (RTP). Information was current at the time of initial WP publication.

The study area is bounded on the west by the Maricopa County line. From the western county line, it is bounded on the north by a line parallel to I-10, one mile to the north of that highway, until that line reaches the projected alignment of Camelback Road. The alignment of Camelback Road forms the remainder of the study area's northern boundary, except where the boundary swings north around Luke Air Force Base, which is fully included in the study area. The eastern boundary of the study area is 19th Avenue north of the Gila River Indian Community (GRIC) and the eastern boundary of Maricopa County south of the GRIC. The eastern boundary swings west around the GRIC, which is fully outside the study area. The southern boundary of the study area is I-8.

Much of this study area is lightly populated with limited transportation services and facilities. The study focuses on those areas that are more heavily populated, closer to Phoenix, and expected to grow in the next 50 years, thereby requiring additional transportation facilities and services.

The chapter identifies the transportation issues that require attention in the remainder of the SWATS transportation planning effort. The majority of the transportation issues that must be addressed in order to mitigate future transportation problems result from expected increases in population and employment. As the population of the study area increases, demand for transportation facilities and services will increase. The SWATS transportation planning effort is focused on identifying that demand and recommending transportation facilities and services to address it. The underlying purpose of the effort is to mitigate future transportation problems. The transportation issues identified in this chapter are an integral step between acknowledging expected increases in demand for transportation and identifying transportation facilities and services to accommodate that demand.

Chapter Organization

The chapter starts with a summary description of the development expected for the study area, as the Phoenix metropolitan area increases in population. The travel patterns and transportation issues expected to arise from future development are summarized. These have been investigated through discussions and other activities with a variety of public and private agencies, through contact with the public and residents of the area, and through technical analysis. Each method of identifying transportation issues in the SWATS area is described and a list of expected issues presented.

4.1 Future Land Use and Travel Demand Patterns

The population of the Phoenix metropolitan area is approximately 3.2 million. Population is expected to grow significantly in the coming years. The SWATS transportation planning effort is dedicated to evaluating future transportation needs in the southwest valley in anticipation of substantial population by the year 2030.

4.1.1 Summary of Land Development Forecasts

Of the 3.2 million metropolitan population, just under 0.4 million, or about 12 percent, was in the SWATS area in 2000. The population in the SWATS area is forecast to be just over 900,000 in 2020 and represent a growing portion of the metropolitan area population. In the year 2030, the SWATS area is forecast to have over 1.4 million people, about 20 percent of the metropolitan. Two sets of land development forecasts have been prepared for the SWATS area. These two scenarios differ principally in the intensity of development activity expected to take place in southern Goodyear. If the increased levels of development take place in southern Goodyear, an additional 110,000 people are forecast in the SWATS area. Under either scenario, the population in the SWATS area will have increased 225 to 250 percent compared to 2000

In 2000 there were approximately 190,000 jobs located in the SWATS area. Upon the metropolitan population reaching 6.6 million, an employment base of 800,000 to 825,000 is expected for the SWATS area, depending upon the intensity of development in southern Goodyear. At that time, the employment in the SWATS area will have increased 325 percent over 2000.

In 2000 there were approximately 180,000 jobs located in the SWATS area. As the metropolitan population increases, the number of jobs in the SWATS area is expected to increase also. In the year 2020, an employment will surpass half a million. By 2030 an employment base of 800,000 to 825,000 is expected for the SWATS area, depending upon the intensity of development in southern Goodyear. At that time, the employment in the SWATS area will have increased 325 percent over 2000.

The population and employment growth forecast for the SWATS area will not be distributed evenly over the study area. The heaviest concentrations of current population are north of I-10 and east of Loop 101, with a number of smaller concentrations further to the west. Population growth is concentrated on both sides of I-10 from the Agua Fria River to Sun Valley Parkway, and south of the Gila River in southern Goodyear and Gila Bend. Population is forecast to push west along the I-10 corridor. Population densities in the growth areas will not be as dense as they are for current populations.

The heaviest concentrations of current employment are east of Loop 101 and north of Broadway Road, with other isolated concentrations at Luke Air Force Base and both east and west of the Phoenix-Goodyear Airport along Lower Buckeye Road. Employment is forecast to be dispersed more broadly along the I-10 corridor from central Phoenix to Sun Valley Parkway. Employment density will remain highest in the I-10 corridor east of the Phoenix-Goodyear Airport, between I-10 and Lower Buckeye Road, and along Grand Avenue and Loop 101.

4.1.2 Forecast Travel Demand Patterns

As the population of metropolitan Phoenix reaches 6.8 million, the population of the SWATS area will have tripled, from 0.4 million to approximately 1.3 million. Employment in the area will have quadrupled. Travel rates can expect to increase more than three fold, assuming the recent history of increasing travel per person continues. The lower employment and population densities anticipated for future development will tend to increase travel distances.

East/west travel in the study area will rise substantially. The preponderance of new development along the I-10 corridor as far west as Sun Valley Parkway will reinforce the existing strong east/west travel patterns exhibited by heavy I-10 traffic volumes during commuting hours. Job growth along the I-10 corridor will be strong and jobs will be concentrated east of the Agua Fria River.

North/south travel will also rise substantially. Some north/south travel will be used to access facilities serving the predominant east/west movements. However, the expansion of the northwestern suburbs concurrently with the southwestern suburbs will increase travel between the southwest and northwest along north/south axes. Population growth in southern Goodyear and Gila Bend will also result in increased north/south travel from these areas to locations north of the Gila River.

Higher employment in the eastern portion of the study area and the employment centers of downtown Phoenix and Sky Harbor Airport, coupled with the westward expansion of residential development, may result in strong directional splits of traffic volumes by time of day. However, as employment increasingly moves west of existing housing stock, directional splits may be diluted.

The rate of increase in employment in the SWATS area is forecast to be higher than the rate of increase in population. This will result in a growth of work travel from outside the study area, from the major residential areas located to the north and east.

4.2 Issues Identified through Agency Participation

A major effort in the identification of transportation issues for the SWATS area involved an outreach effort to gather opinions and ideas from a host of public and private agencies. A variety of agencies participated in several different ways including through forums, workshops, public meetings, or work progress meetings with MAG. Issues were also identified in letters from a number of the local jurisdictions to MAG.

Individual interviews were conducted with representatives of nearly all of the agencies listed above. Most of the interviews were conducted in person with the remaining conducted by telephone. Interviews were conducted with one or more representatives of the agency. During the interviews a standardized survey was administered, a copy of which is included in Appendix III. The results of the survey will be reported in the *MAG Regional Transportation Plan: Southwest Area Transportation Study Consultation Summary Report.*

4.2.1 Participating Agencies

The participating agencies included:

- Federal Highway Administration;
- Federal Transit Administration;
- Bureau of Land Management;
- Luke Air Force Base;
- Amtrak
- Arizona Department of Transportation;
- Arizona State Transportation Board;
- Arizona State Land Department;
- Arizona Game and Fish Department;
- Arizona Department of Corrections;
- Arizona Department of Public Safety;
- Maricopa County Department of Transportation;
- Maricopa County Flood Control District;
- Regional Public Transportation Authority (Valley Metro);
- City of Avondale;
- City of Gila Bend;
- City of Goodyear;
- City of Litchfield Park;
- City of Phoenix;
- City of Tolleson;
- Gila River Indian Community;
- Town of Buckeye;
- Burlington Northern and Santa Fe Railroad; and
- Union Pacific Railroad.

4.2.2 Issues Identified

A variety of transportation issues were identified. Many participants made reference to improvements they felt were needed on specific arterials located in the study area. This report presents such suggestions in a generalized way (such as continuity and capacity improvements to the arterial grid). Project specific suggestions have been organized into issues or problems, the solutions to which require further planning, investigation, and analysis. There is no significance to the order in which the issues are presented below. The following list identifies the more salient issues.

- Preservation of right-of-way for future transportation projects;
- Identification of future transportation services including local bus, express bus, light rail, commuter rail, bus-rapid-transit, park-and-ride facilities, and shuttles;
- Funds for transit improvements;
- Improvement of existing transit services;
- Provision of bus stop pullouts;

- Local community transit;
- Provision of rural transit service;
- Mobility needs of the elderly;
- Safety of small, light-weight, street legal vehicles such as golf carts and urban electric vehicles;
- Expansion of dial-a-ride services;
- Enhancement of transit technologies;
- Funds for I-10 corridor improvements;
- Additional capacity on I-10 west of central Phoenix beyond the White Tank Mountains;
- An I-10 reliever;
- Additional interchanges on I-10;
- Funds for Loop 303 improvements;
- The Loop 303 extension south;
- Additional HOV lanes on area freeways;
- Identification of truck routes;
- Improvements to the CANAMEX route;
- Improvements to the arterial grid network;
- Identification of major arterials;
- Arterial signal coordination and other traffic engineering improvements;
- Additional bridge crossings, including the Hassayampa River;
- Highway grade separations at railroad and pedestrian crossings;
- Funds for transportation studies and policy investigations;
- Air quality;
- Protection of Luke Air Force Base from encroaching development;
- Provision of additional bicycle routes;
- Continuity and expansion of non-motorized routes and facilities;
- Improved pedestrian cross walks and signalization;
- Inconsistent access control, noise control, and land developer responsibilities for transportation improvements; and
- Implementation of an impact fee to fund improvements to major facilities.

4.3 Issues Identified through Public Participation

The public was asked to assist in the identification of transportation issues needing attention in the SWATS effort. A public meeting was held on September 10, 2002, from 5:00 to 7:00 PM at the Estrella Mountain Community College. A public information flyer was developed in August 2002 and distributed to over 1000 recipients in the study area. The flyer provides information about the study including contact information for MAG and WSA staff and also refers to a website where interested parties can obtain additional information. The flyer is shown in Appendix IV.

4.3.1 Issues Identified

The public participation process identified a large number of issues. The following list identifies the salient issues. There is no significance to the order in which the issues are presented below.

- Additional capacity on I-10 west of central Phoenix;
- Additional interchanges on I-10 west of Phoenix;
- Completion of Loop 303 to I-10;
- North/south high speed capacity south of I-10 in the Loop 303 area to southern Goodyear;
- North/south high speed capacity south of I-10 in the South Mountain Bypass/Loop 101 area;
- Improvement of SR-85 to freeway status;
- Development south of I-10 will create transportation demand;
- Additional east/west high speed capacity parallel to I-10;
- Implementation of Intelligent Transportation Systems (ITS) corridors;
- Creation of super streets to serve as east/west relievers;
- Improvements to the arterial grid network;
- Additional river crossings;
- Implementation of light rail in several corridors;
- Commuter rail along Union Pacific Railroad tracks from Avondale to central Phoenix and along Burlington Northern and Santa Fe tracks;
- Provision of additional park-and-ride facilities;
- Expansion of existing bus routes to the west;
- Expansion of bicycle facilities;
- Creation of facilities for electric vehicles; and
- Truck traffic on the CANAMEX route.

4.4 Issues Identified through Technical Analysis

The technical analyses to identify transportation issues in the SWATS area include comparisons of land development forecasts with existing and committed transportation facilities. For highways these comparisons are based on expected increases in transportation demand in the study area with available capacity on the Long Range Transportation Plan Based Reference Network (LRTP), which consists of existing highway facilities and planned facilities whose implementation is expected. In general the growth in the population and employment in the SWATS area and metropolitan Phoenix expected over the next 25 years will over-tax the capabilities of the existing transportation system, even with the additions included in the region's current Long Range Transportation Plan.

The major transportation issues resulting from population and employment growth in the SWATS area are presented below. A more complete analysis and description of these issues is presented in Chapter 3. Additional detail is available on some topics in Chapter 5.

4.4.1 Roads and Highways

Major increases in east/west travel are expected as a result of growth in the study area. Traffic forecasts for 2030 for the Long Range Transportation Plan Based Reference Network of highways show severe levels of congestion. East of Airport Road it is difficult to find an intersection of arterials in the SWATS area that is forecast to operate with an acceptable level-of-service during the peak hour. East of Watson Road it is almost impossible to find sections of east/west roadway forecast to operate without heavy congestion. Some north/south arterials in this same portion of the study area are expected to operate with acceptable levels of congestion, particularly south of I-10. Crossings of the Agua Fria River and of the Gila River west of the Agua Fria show substantial congestion. West of Airport Road and in southern Goodyear the arterial grid is forecast with more isolated locations of congestion.

Major increases in the east/west capacity of the arterial and freeway systems will be necessary to reduce forecast congestion to acceptable levels. These major capacity increases will need to extend from central Phoenix at least as far west as SR-85. Some increases in north/south highway capacity will be needed, particularly north of I-10 and across the Gila River into southern Goodyear. Thus, major increases bridge capacity will be required over the Gila River west of the Agua Fria. Increases in bridge capacity will also be required over the Agua Fria.

I-10 is the major existing high speed facility serving east/west travel in the study area. As currently configured I-10 will be inadequate to serve the expected transportation demand. The concentration of population and employment growth south of I-10 to the Gila and Salt Rivers indicates strong demand for high speed east/west travel parallel to, and south of, I-10.

A number of arterials serve shorter east/west travel in the corridor. However, west of Estrella Parkway very few of the arterials are currently more than a single lane in each direction. Furthermore, there are substantial components of the grid network in that same area which do not yet exist. There are few east/west arterials south of I-10 or west of Loop 101 that currently provide three lanes in each direction. A major component of improving the east/west arterial network in the study area is bridge construction over the Agua Fria and Hassayampa Rivers.

Increases in north/south travel are expected as a result of growth in the study area. North/south travel consists of two components. First, north/south travel will provide access to facilities serving the more predominant east/west movement. Consequently, north/south arterials will need improved access to I-10 and any parallel I-10 relievers. Additional interchanges on I-10 will be needed to facilitate this access. Second, north/south travel itself is expected to increase. Population increases in the Gila Bend and southern Goodyear areas will result in increases in north/south movement between those areas and areas north of the Gila River. Serving these movements will require bridge construction over the Gila River. Population growth in the City of Phoenix west of 19th Avenue and south of the Salt River, coupled with employment growth north of the Salt River, indicate the need for additional Salt River bridge crossings. The ongoing study of the South Mountain Bypass may result in recommendations to serve such travel.

The faster increase in jobs than in population in the SWATS area will bring more commuters into the study area from the north and east. Major increases in these movements will overwhelm existing facilities. Increases in these movements can be expected both on the arterial system and the freeway system. East of Loop 101 the arterial system serving the north is largely built to three lanes in each direction. To the west of Loop 101 the arterial system serving the north is not fully built to three lanes in each direction. This is due in part to lower levels of development and traffic demand and in

part to the constraints of the Agua Fria River, the New River, and the Glendale Municipal Airport. To the extent that the rivers preclude completion of the grid along 107th and 115th Avenues and El Mirage Road, alternative higher speed access to the north may be necessary.

Freeways, with their access controls and lack of intersections, provide a much higher level of safety per vehicle mile of travel than do arterials and other lower class roadways. A concentration of highway capacity increases in freeways should help to reduce the number of accidents forecast for the SWATS area.

4.4.2 Transit

Transit service west of 83rd Avenue is extremely limited in both the north/south and east/west directions. The increased population and employment in the SWATS area is expected to result in extensive new development as far west as the Hassayamp River and in southern Goodyear south of the Gila River. As development moves west and south, the demand for transit service can be expected to move. Expansion of regular route bus services along the arterial grid, as development expands that grid to the west, is essential. These services may be needed west of Sun Valley Parkway and in portions of southern Goodyear by 2030.

However, these services provide relatively low capacity and low speed service. Because of the greater distances involved in commuting to downtown Phoenix and to other distant locations in the metropolitan area, demand for higher speed transit is expected. Higher speed and higher capacity services, such as light rail in the I-10 corridor, commuter rail along the Union Pacific tracks, and bus-rapid-transit in freeway corridors are among the options requiring further consideration as the southwest valley develops. However, proposed future development densities are lower than those of existing development and may impede the effective provision of higher capacity, higher speed transit service. MAG's ongoing High Capacity Transit Study and the Regional Public Transportation Authority's Regional Transit System Study are currently examining these and other transit issues.

At the other end of the spectrum, demand for local, community transit services providing residents access to local services can be expected to rise. Currently, there is little local transit service within small population centers such as Litchfield Park, Tolleson, and Avondale. As these communities expand and are surrounded by relatively continuous development, demand for such services is expected to increase.

4.4.3 Non-Motorized Facilities

Increasing population in the study area will place increased demands on non-motorized facilities, such as bikeways and trails. The trail network in the study area will require expansion, along with connection of facilities to provide continuity for non-motorized travel. The system of bicycle, pedestrian, and multi-use non-motorized facilities in the SWATS area is incomplete. There are currently substantial gaps in the continuity of non-motorized facilities.

Bicycle and pedestrian facilities are not fully integrated into the improvement process for the arterial system. A more fully functional network of bicycle and pedestrian facilities in the SWATS areas will be realized with the inclusion of bicycle and pedestrian facility provision in the improvement of the arterial system. Additionally, major facility upgrades and improvements afford the opportunity to provide parallel improvements to bicycle, pedestrian, and multi-use non-motorized facilities. Bridges over the major rivers in the study area are an example of such an opportunity.

Numerous opportunities also exist for formal creation of multi-use facilities along river banks,

canals, power lines, railroads, and other linear facilities to remove gaps in existing formal and informal facilities.. Multi-use trails and paths require a variety of support facilities such as parking, water, shelter, and storage.

Bikes on transit and bicycle facilities at transit stations currently provide for increased transportation options in areas served by transit. Improving pedestrian access to transit should focus on removing barriers to effective pedestrian/transit connections. Provision for these connections and for pedestrian circulation between residential areas and nearby activity centers can be accommodated in the arterial and land development processes.

4.5 Summary of Issues Identified

The issues identified through agency participation, public participation, and technical analysis have a great deal in common. Some of the issues identified reflect existing problems, while other issues reflect potential problems that will need to be addressed in the future. For example, I-10 already exhibits signs of congestion in the eastern portion of the SWATS area during peak hours. However, in the western portion of the study area there are few problems on I-10. As land development takes place further to the west in the coming years, congestion problems on I-10 to the west will increase..

The SWATS effort is focused on transportation issues in the study area with regional impact. Some of the issues identified above are of local, rather than regional, significance and are therefore not given further consideration here.

4.5.1 Short-Term Transportation Issues

A number of the issues identified in the sections above either indicate existing problems or impending ones. These are identified as short term transportation issues. Short-term transportation issues are those that will affect the SWATS area before the major areas of development have moved west of the Agua Fria River. The following are short-term issues and have not been prioritized:

- Capacity on I-10 east of Loop 101;
- North/south high speed capacity south of I-10 in the area of the proposed South Mountain Bypass and Loop 101;
- Transit service west of 87th Avenue in the developed portions of the study area;
- Additional park-and-ride facilities;
- Transit service to rural areas;
- Truck traffic in older town centers;
- Pedestrian conflicts with vehicles in older town centers;
- Arterial signal coordination;
- Right-of-way preservation for future transportation facilities;
- Widening of arterials south of I-10 east of Loop 101;
- Salt River crossings; and
- Continuity and expansion of bicycle and trail facilities.

4.5.2 Medium-Term Transportation Issues

Many of the transportation issues identified in the short-term are similar to the medium-term, but will be located further to the west consistent with the expansion of development to the west. Other issues may arise in areas not under intense development. Medium-term transportation issues are those that will affect the SWATS area when the major areas of development have moved west of the Agua Fria River but not yet reached SR-85. The following are medium-term issues and have not been prioritized:

- Capacity on I-10 west of Loop 101 to Loop 303;
- Access to I-10 west of Loop 101;
- East/west high speed capacity south of I-10;
- Additional east/west high speed HOV capacity;
- North/south high speed capacity west of Loop 101;
- Improvements to the arterial grid west of Loop 101;
- ITS, signal coordination, and other arterial street improvements;
- Bridge crossings over the Agua Fria River and Gila River;
- High speed, high capacity transit between central Phoenix and points west of the Agua Fria River;
- Additional park-and-ride facilities;
- Local and regional bus transit service west of the Agua Fria River;
- Improvements to the Canamex route; and
- Highway railroad grade separation.

4.5.3 Long-Term Transportation Issues

Many of the transportation issues identified in the short and medium-terms are similar to the long-term, but will be located further west consistent with the expansion of development to the west. Other issues may arise in areas not under intense development. Long-term transportation issues are those that will affect the SWATS are when major areas of development have moved west of SR-85. The following are long-term issues and have not been prioritized:

- Capacity on I-10 west of Loop 303 to Wickenburg Road;
- Access to I-10 west of Loop 303;
- East/west high speed capacity south of I-10 as far west as Wickenburg Road;
- Additional east/west high speed HOV capacity;
- North/south high speed capacity west of Loop 303;
- Improvements to the arterial grid west of Loop 303;
- Bridge crossings of the Hassayampa River;
- High speed high capacity transit between central Phoenix and points west of Loop 303;
- Additional park-and-ride facilities; and
- Local and regional bus transit service west of SR-85.

4.6 Evaluation Criteria for Alternatives

Addressing the transportation issues in the SWATS area noted above will require the implementation of a variety of potential transportation facilities and services. In order to evaluate individual transportation facilities and services for future implementation, information will be developed on each potential facility or service. Data will be developed primarily through MAG's travel demand forecasting model. The data will be used to determine the benefits and liabilities of the individual facilities under consideration for implementation. Potential data to be used could include:

- A general description of the roadway system in study area;
- Functional class and number of lanes (separately for HOV and general purpose lanes);
- HOV miles, center-line miles, lane-miles, and daily capacity miles by facility type;
- ITS implementation;
- Traffic volumes by vehicle class;
- Daily vehicle miles of travel by area and functional class;
- Congested highway speeds by functional class in the evening peak period;
- Level-of-service (LOS) on freeway links and at arterial intersections in the evening peak period;
- Safety impacts expected on arterials and freeways;
- Roadway deficiencies;
- A general description of the transit system in study area;
- Transit facilities, services, and coverage areas recommended in other transit studies;
- Locations of park and ride lots;
- A general description of non-motorized system in study area, including bike path and trail facilities; and
- Non-motorized system deficiencies.

4.7 Summary and Conclusions

A variety of transportation issues have been identified for consideration in the SWATS effort. Some of these issues reflect existing transportation problems in the study area, while others reflect problems which are expected to arise as the population and employment of the area increase in the coming decades. The purpose of identifying these transportation issues is to inform the planning process so that potential transportation problems can be addressed before they become actual transportation problems.

The transportation issues identified provide a basis for identifying potential new transportation facilities and services. These potential facilities and services can then be evaluated to determine how well they can be expected to address the potential problems. A set of data has been identified which will be used in the evaluation of these potential facilities and services. Following that evaluation,

facilities and services will be identified for further evaluation and consideration in development of the Regional Transportation Plan covering the entire MAG area. Subsequent chapters document the potential transportation facilities and services identified for evaluation in the SWATS effort, the evaluation of the ability of those facilities and services to ameliorate transportation problems, and the facilities and services recommended for consideration in the Regional Transportation Plan.